

The following modifications to the cylinder heads, cylinder head gaskets and cylinder head bolts have been made to account for technical developments and for the different installations situations in types 115.1 and 123.1:

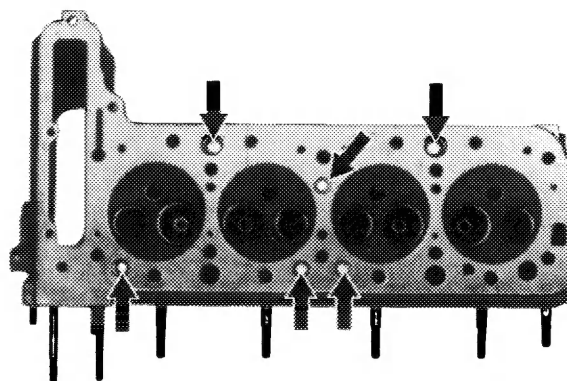
## A. Engine 615

### Modifications to cylinder head

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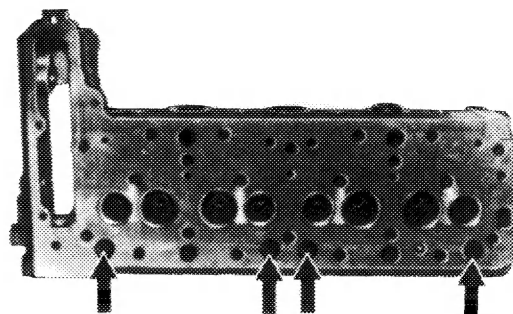
a) The modification to crossflow cooling in the cylinder head has dispensed with the water distributors (arrows).

Starting: November 1975



105-12 033

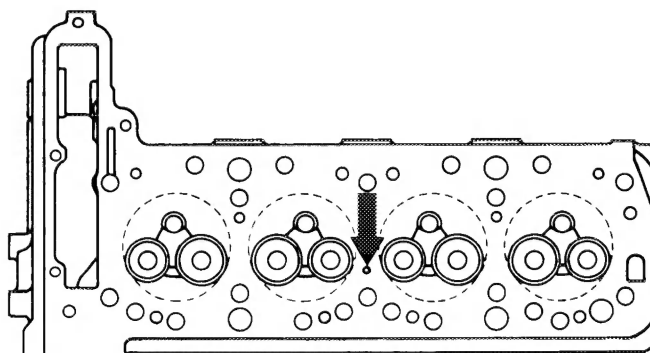
During a certain period of transition the passages at the right-hand side (straight-ahead) were closed by metal caps (arrows).



105-12 096/1

b) To stop cylinder head cracking and avoid the risk of damage due to overheating the bottom plate has been strengthened and a 6 mm dia. water hole provided between cylinders No. 2 and No. 3 (arrow).

Starting: May 1977

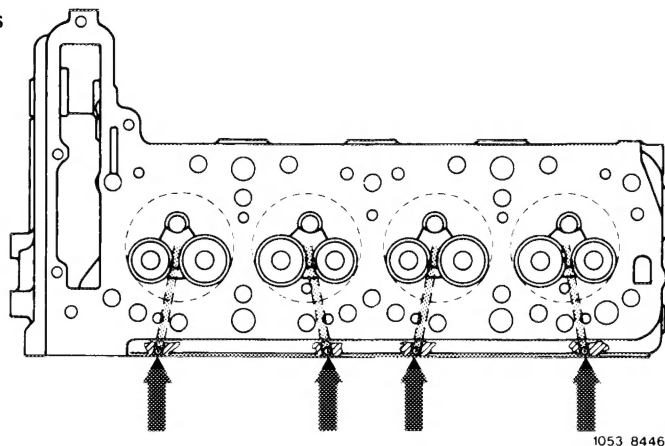


1053-8455

c) To improve cooling efficiency around the valve webs and precombustion chambers, coolant passages have been provided between the separate valves. The outside ends of these passages are closed by ball bearings (arrows).

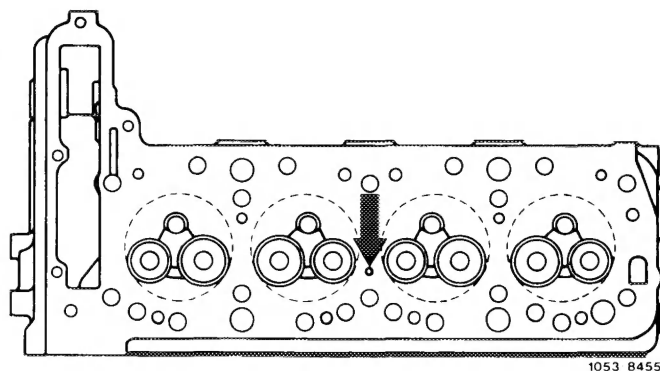
Starting: August 1978

This cylinder head can be used on all engines.



This cylinder head again has, like the preceding version, a 6 mm dia. water hole between cylinders No. 2 and No. 3 to stop damage due to overheating (arrow).

Starting: October 1978



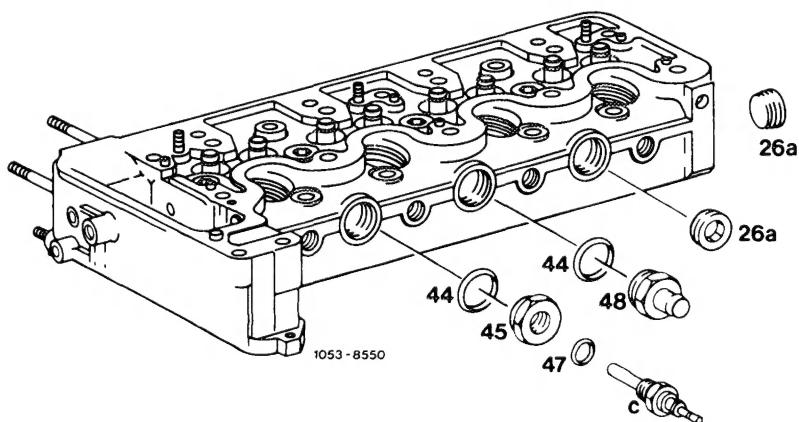
### Allocation of cylinder head connections

On account of the different installation arrangements in types 115.1 and 123.1 the replacement cylinder head is supplied without heater connections, temperature sensors and screw plugs.

These parts have to be selected to suit the engine in question.

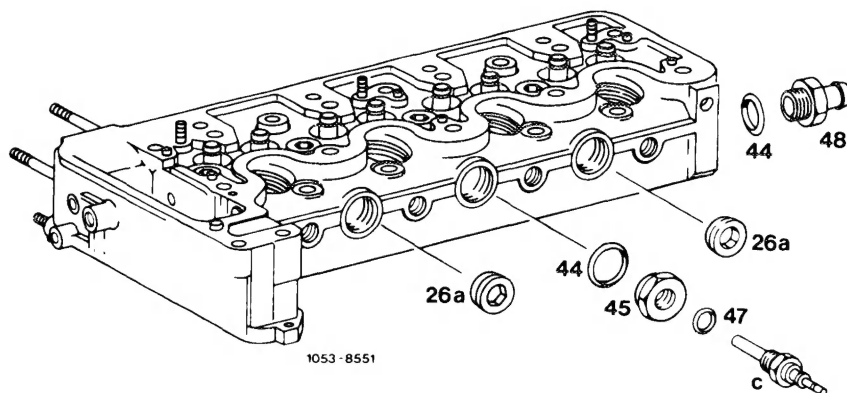
Engine in type 115.1

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A 30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- c Temperature sensor, coolant gauge



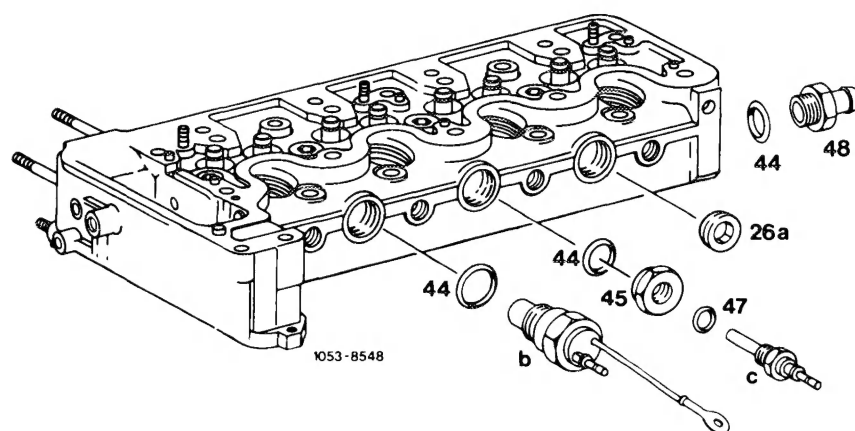
Engine in type 123.1, preglow system  
with preglow indicator  
(1st version)

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A 30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- c Temperature sensor, coolant gauge



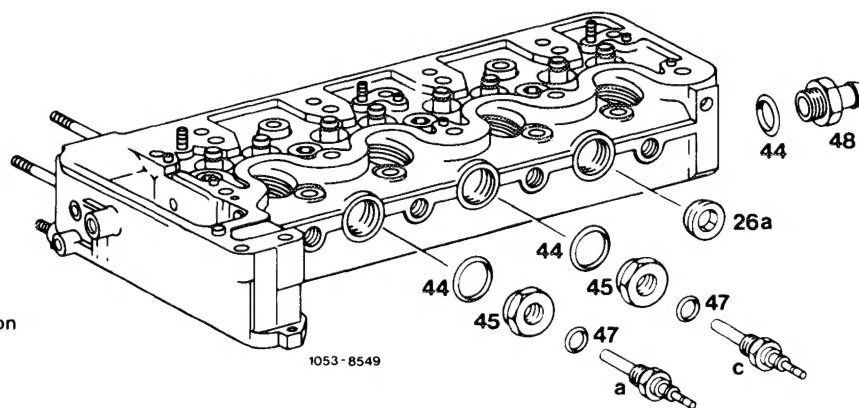
Engine in type 123.1, preglow system  
with starting indicator  
(2nd version)

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A 30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- b Thermo time switch
- c Temperature sensor, coolant gauge



Engine in type 123.1 with key  
starting system  
(3rd version)

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A 30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- a Temperature sensor, preglow indicator
- c Temperature sensor, coolant gauge

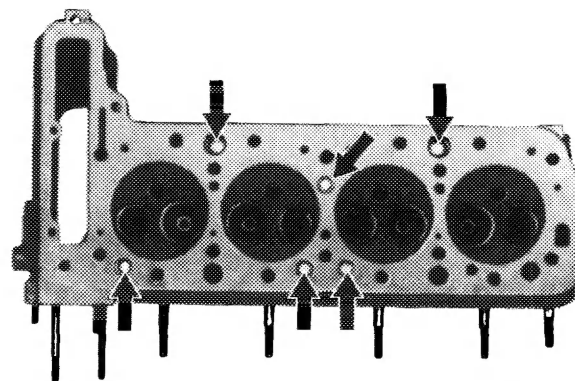


### Allocation of cylinder head gaskets

The different cylinder head and cylinder head bolt versions require corresponding cylinder head gaskets:

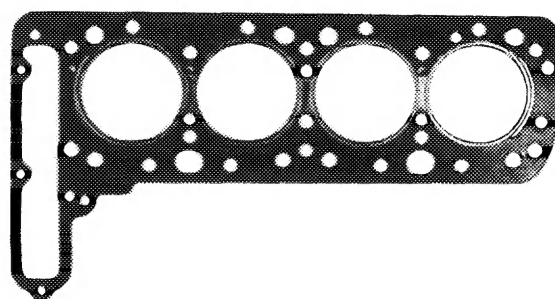
a) Cylinder heads with water distributors are to be used only with cylinder head gaskets as per part No. 615 016 07 20 and 615 016 08 20.

Note torquing specifications for cylinder head bolts (05–105).



Cylinder head with water distributors (arrows)

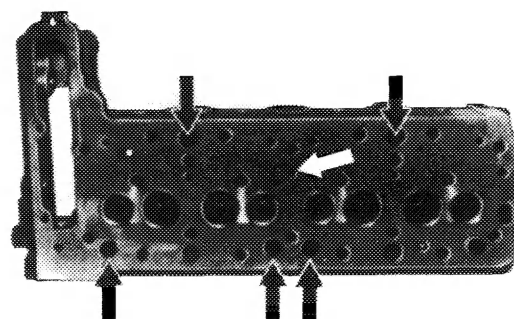
105 - 12 033



Cylinder head gasket, part No. 615 016 07 20 and 615 016 08 20

105-12 246

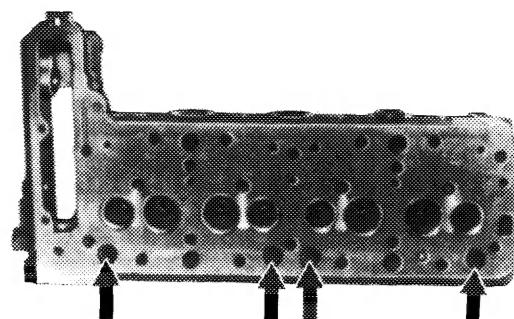
b) Engines with **hexagon socket cylinder head bolts** and cylinder heads without water distributors or cylinder heads in which the water distributor passages have been closed by metal caps, will accept any cylinder head gasket version (with the exception of cylinder head gaskets for cylinder heads with water distributors).



Cylinder head without water distributors

105 - 12 086

Note torquing specifications for cylinder head bolts (05–105).



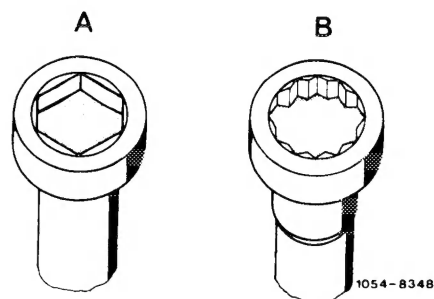
Cylinder head with metal caps

105-12 086/1

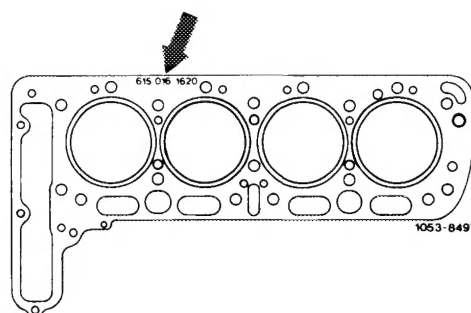
c) Engines with **twelve-point socket cylinder head bolts** require the cylinder head gasket with improved impregnation, part No. 615 016 16 20. This cylinder head gasket can be identified by oblong holes (arrows), adjacent to the stamped part No.

Note torquing specifications for cylinder head bolts (05–105).

- A Hexagon socket cylinder head bolt
- B Twelve-point socket cylinder head bolt



Cylinder head gaskets are supplied in welded film from which they must not be removed until just before use, because they are affected by light and ozone.

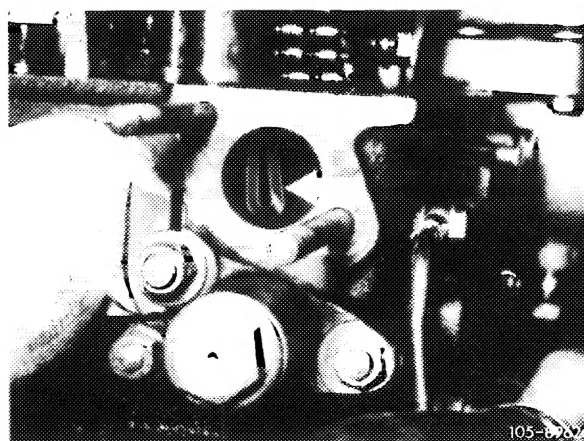


Cylinder head gasket, part No. 615 016 20

## B. Engine 616

### Modification

The rubber stopper provided in the cylinder head of engine 616.916 is no longer used in engine 616.912 (arrow).



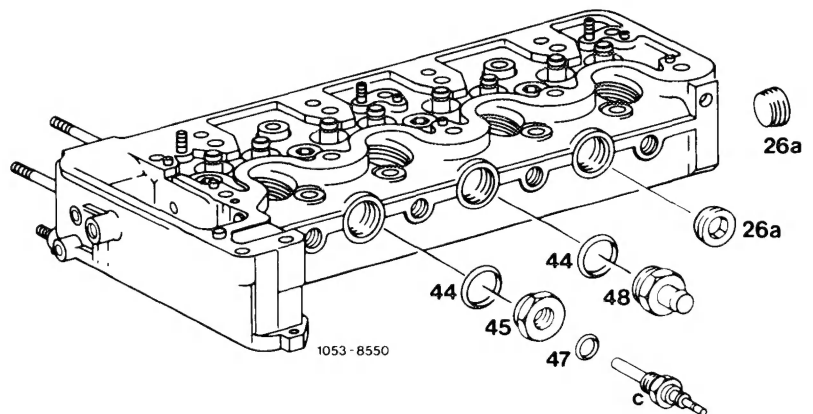
The rubber stopper is to be removed from engine 616.916 in the event of complaint (e.g. stopper has dropped out and is resting in thermostat) or on the occasion of repairs to the cylinder head.

## Allocation of cylinder head connections

On account of the different installation arrangements in types 115.1 and 123.1 the replacement cylinder head is supplied without heater connections, temperature sensors and screw plugs. These parts have to be selected to suit the engine in question.

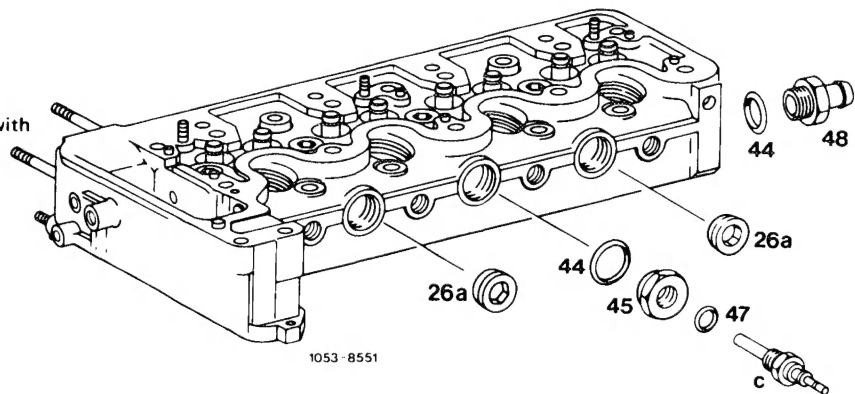
### Engine in type 115.1

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A 30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- c Temperature sensor, coolant gauge



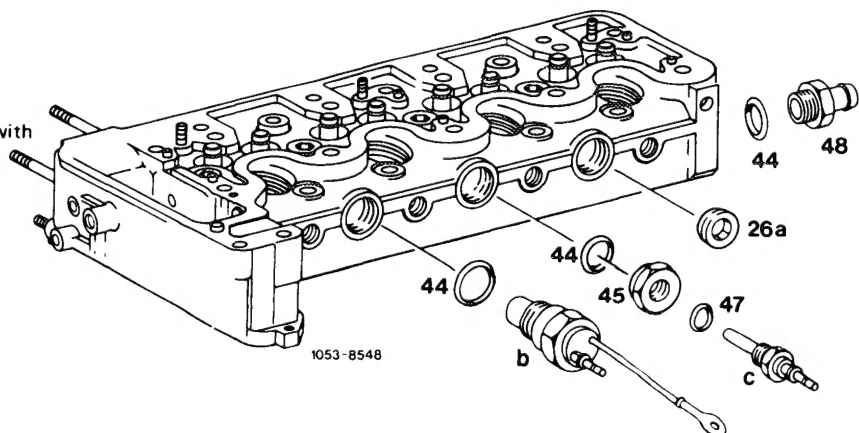
### Engine in type 123.1, preglow system with preglow indicator (1st version)

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- c Temperature sensor, coolant gauge



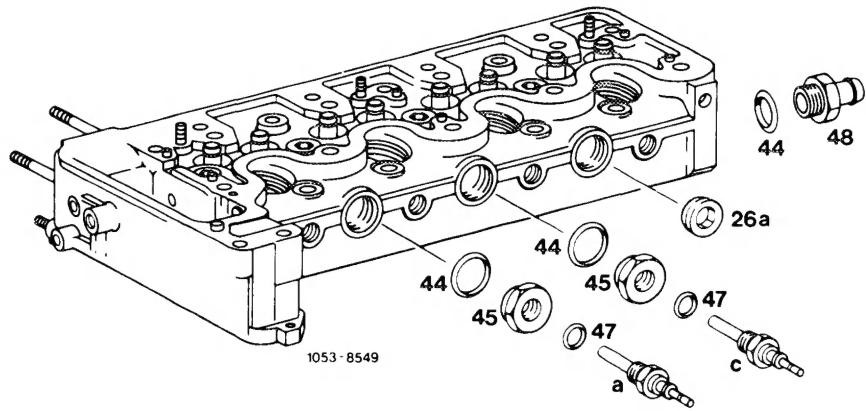
### Engine in type 123.1, preglow system with starting standby indicator (2nd version)

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A 30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- b Thermo time switch
- c Temperature sensor, coolant gauge



Engine in type 123.1  
with key starting system  
(3rd version)

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A 30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- a Temperature sensor, preglow indicator
- c Temperature sensor, coolant gauge

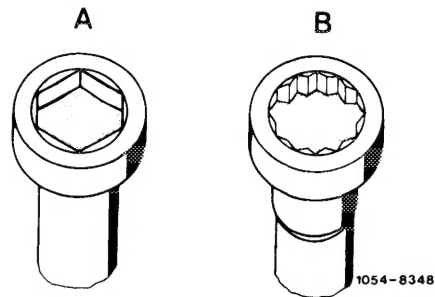


### Allocation of cylinder head gaskets

Engines with **hexagon socket cylinder head bolts** will accept all cylinder head gasket versions.

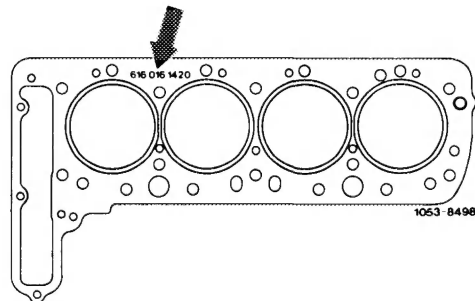
In contrast, engines with **twelve-point socket cylinder head bolts** will only take cylinder head gaskets with improved impregnation, part No. 616 016 14 20 (arrow).

- A Hexagon socket cylinder head bolt
- B Twelve-point socket cylinder head bolt



Note torquing specifications for cylinder head bolts (05–105).

Cylinder head gaskets are supplied in welded film from which they must not be removed until just before use, because they are affected by light and ozone.

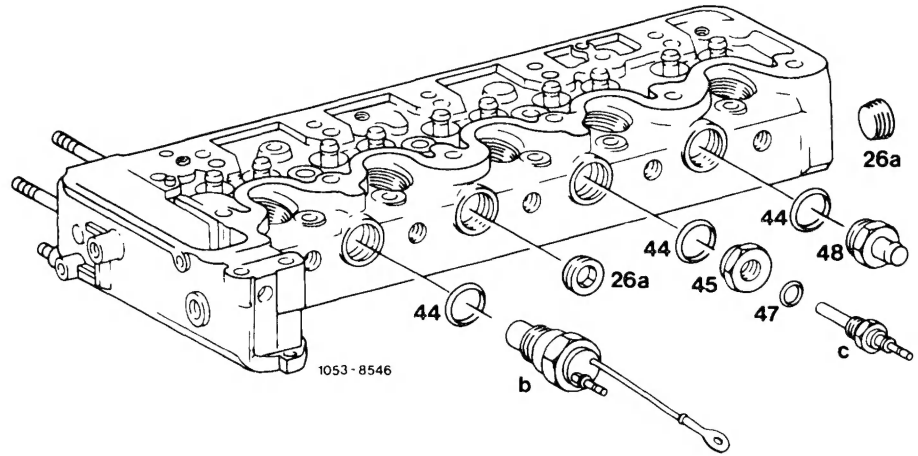


### C. Engine 617

On account of the different installation arrangements in types 115.1 and 123.1 the replacement cylinder head is supplied without heater connections, temperature sensors and screw plugs. These parts have to be selected to suit the engine in question.

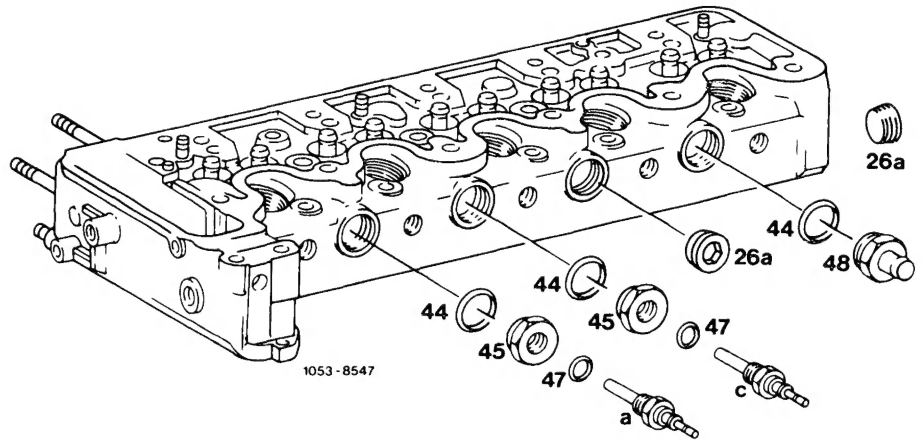
Engine in type 115.1

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A 30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- b Thermo time switch
- c Temperature sensor, coolant gauge



Engine in type 123.1

- 26a Screw plug M 30 x 1.5
- 44 Sealing ring A 30 x 36
- 45 Screwed union
- 47 Sealing ring
- 48 Threaded union, heater connection
- a Temperature sensor, preglow indicator
- c Temperature sensor, coolant gauge

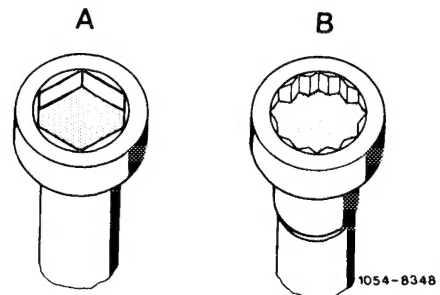


### Allocation of cylinder head gaskets

Engines with **hexagon socket cylinder head bolts** will accept all cylinder head gasket versions.

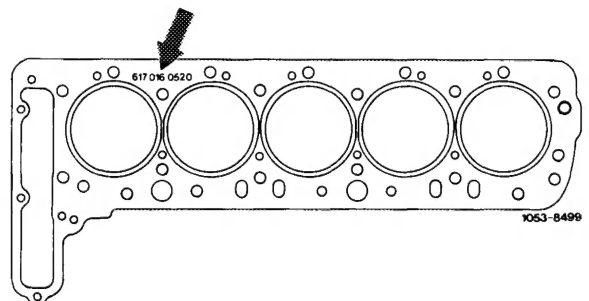
In contrast, engines with **twelve-point socket cylinder head bolts** will only accept cylinder head gaskets with improved impregnation, part No. 617 016 05 20 (arrow).

- A Hexagon socket cylinder head bolt
- B Twelve-point socket cylinder head bolt



Cylinder head gaskets are supplied in welded film from which they must not be removed until just before use, because they are affected by light and ozone.

Note torquing specifications for cylinder head bolts (05-105).





## D. All engines

### Fuel filter mounting on cylinder head

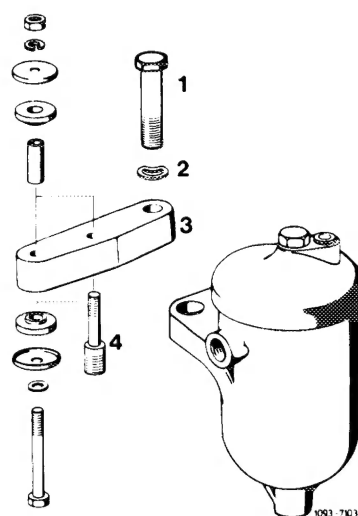
Starting with the series introduction of engines 615.940/941, 616.912 and 617.912 the tapped holes for holding the fuel filter have been modified from M 12 to M 8.

In engines 615.912/913, 616.916 and 617.910 the studs (4) and hex-head bolts (1) have additionally had to be modified from M 12 (1st version) to M 8 (2nd version).

#### 1st version

- 1 Hex-head bolt M 12 x 35
- 2 Washer
- 3 Bracket
- 4 Stud M 12

Bracket (3), not having been modified, now requires a reducer (6) beneath hex-head bolt (5).



The spares service only supplies cylinder heads with M 8 threads.

Engines with M 12 threads in the cylinder head must therefore be modified to the 2nd version in the event of repair.

#### 2nd version

- 3 Bracket
- 5 Hex-head bolt M 8 x 45
- 6 Reducer
- 8 Stud M 8

